Algebra 2 Trig. **Chapter 5 Review** **Name** Key

Solve the following equations and inequalities for x.

1) $7 + \sqrt{2x-5} = 11$

$\sqrt{2x-5} = 4$

$2x-5 = 16$

$2x = 21$

$x = 10.5$

2) $3(x-5)^2 - 2 = 46$

$3(x-5)^2 = 48$

$(x-5)^2 = 16$

$x-5 = 4$ or -4

$x = 9$ $x = 1$

3) $2x - 7 > -13$

$2x > -6$

$x > -3$

4) $6x \leq 8x - 14$

$+14 \leq 2x$

$7 \leq x$

5) $4|2x-3| = 28$

$|2x-3| = 7$

$2x-3 = 7$ or -7

$2x = 10$ or -4

$x = 5$ or -2

6) $2(x-3)^3 = 16$

$\sqrt[3]{(x-3)^3} = \sqrt[3]{8}$

$x-3 = 2$

$x = 5$

Solve the following equations for y.

7) $5x - 2y = 8x + 10$

$-2y = 3x + 10$

$y = -\frac{3}{2}x - 5$

8) $4(2y + 3x) = 20$

$2y + 3x = 5$

$2y = -3x + 5$

$y = -\frac{3}{2}x + 2.5$

9) $7x + 3y = 5y + 10$

$7x - 10 = 5y - 3y$

$\frac{7x-10}{2} = \frac{2y}{2}$

$y = \frac{7}{2}x - 5$

If , f(x) = 7| x + 4 | find each of the following.

10) f(–9)

$7|-9+4|$

$7|-5| = 35$

11) f(2)

$7|2+4|$

$7|6| = 42$

12) x, if f(x) = 3

$7|x+4| = 3$

$x+4 = \frac{3}{7}$ or $-\frac{3}{7}$

$x = -3.5$

$x = -4.4$

13) Central High School has 920 students and their enrollment is decreasing by 25 students a year. Wilson High School has 591 students and their enrollment is increasing by 22 students a year. How long will it take for both schools to have the same number of students? (Write a system of equations and solve.)

$C = 920 - 25x$

$W = 591 + 22x$

$920 - 25x = 591 + 22x$

$920 - 591 = 25x + 22x$

$329 = 47x$

7 years

14) You have an investment that is growing at a rate of 4.7% per year. There is $8235.72 in the account today.

a. Write an exponential equation to model this situation. 1.047

$y = 8235.72(1.047)^x$

b. Find the amount in the account in 5 years.

$x = 5$

$10,362

c. Find the amount in the account in 40 years.

$x = 40$

$51,709

d. How much was in the account 5 years ago?

$x = -5$

$6546

Chapter 6

Solve the following equations and inequalities for x.

1) $3 + (3x - 1)^2 = 28$

$(3x-1)^2 = 25$

$3x - 1 = 5$ or -5

$3x = 6$ or -4

$x = 2$ or $-\frac{4}{3}$

2) $2\sqrt{x+8} - 7 = -3$

$2\sqrt{x+8} = 4$

$\sqrt{x+8} = 2$

$x + 8 = 4$

$x = -4$

3) $\sqrt[3]{x^3} = \sqrt[3]{20}$

$x = 2.71$

4) $\log_x 81 = 4$

$\sqrt[4]{x^4} = \sqrt[4]{81}$

$x = 3$

5) $\log_7 1 = x$

$\frac{\log 1}{\log 7} = x$

$x = 0$

6) $-2 = \log_5 x$

$5^{-2} = x$

$x = .04$

Evaluate.

7) $\log_7 343$ — 3

8) $\log_4 1024$ — 5

9) $\log_5 5^7$ — 7

10) $\log_5 \frac{1}{125}$ — −3

11) $\log_{13} 13^x$ — x

Write in exponential form.

12) $\log_4 16 = 2$

$4^2 = 16$

13) $\log_x 13 = 5$

$x^5 = 13$

14) $x = \log_b y$

$b^x = y$

Give the inverse of each of these equations.

15) $y = 4x - 28$

Do: ·4, −28 — Undo: ÷4, +28

$y = \frac{x + 28}{4}$

16) $y = \frac{2}{5}x - 4$

$y + 4 = \frac{2}{5}x$

$\frac{5}{2}(y+4) = x$

$y = \frac{5}{2}(x+4)$

17) $y = \log_5(x - 2)$

$5^y = x - 2$

$y = 5^x + 2$

18) $y = 3^{x+5}$

$\log_3 y = x + 5$

$y = \log_3 x - 5$

Use the following formula to answer the following questions.

$$\mathbf{A(t) = P\left(1 + \frac{r}{n}\right)^{nt}}$$

Find the final amount on 22 and 23.

19) $18,000 earning 4% interest compounded monthly for 15 years.

$n = 12$

$18000\left(1 + \frac{.04}{12}\right)^{12 \cdot 15}$

$18000\,(1.003)^{180}$

$32,765.43

20) $14,500 earning 8% compounded annually for 19 years.

$n = 1$

$14500\left(1 + \frac{.08}{1}\right)^{19 \cdot 1}$

$62,577.67